



Re: RSL question about chlorite
Jennifer Hubbard to: Elizabeth Quinn

12/12/2011 04:18 PM

From: Jennifer Hubbard/R3/USEPA/US
To: Elizabeth Quinn/R3/USEPA/US@EPA,

You know what? Recently, Eric asked me to review some numbers from the Water program concerning some West Virginia voluntary cleanup site. There was a reference to "Antero." They developed a "Chloride" soil-to-groundwater cleanup number with a groundwater cleanup goal that was a secondary MCL. Is it the same site or a different one? Because this is what I sent to Eric, and it pretty well sums up my feeling on chloride (I don't recall them mentioning chlorite at all, just chloride):

From a toxicological perspective, the main issue would be :

IRIS has no toxicity factor for "chloride." There is a factor for "chlorine" (for chlorine, the target groundwater concentration would be 3.7 mg/L for a 70-kg adult consuming 2 L of water per day), and IRIS acknowledges that chlorine in water can form several different substances:

"... elemental chlorine (Cl₂), chloride ion (Cl⁻) and hypochlorous acid (HOCl). As pH increases, hypochlorous acid dissociates to hypochlorite ion (OCl⁻). The term "free chlorine" (free available chlorine, free residual chlorine) refers to the concentrations of elemental chlorine, hypochlorous acid and hypochlorite ion that collectively occur in water. Several factors, including chlorine concentration, pH, temperature, exposure to light and the presence of catalysts or organic material, affect the stability of free chlorine in aqueous solution. When free chlorine is added to water containing ammonia, chloramines are formed."

There is no MCL for chloride. The target concentration used in the equations discussed below is 250 mg/L, which is the Secondary MCL. Secondary MCLs are typically based on non-health criteria, such as taste, odor, etc.; in this case the SMCL is based on the concentration that imparts a "salty taste" to water.

It would appear that the key question is one of soil and groundwater chemistry, i.e., what form the chloride or chlorine actually takes in the soil and the groundwater.

-----Elizabeth Quinn/R3/USEPA/US wrote: -----

To: Jennifer Hubbard/R3/USEPA/US@EPA
From: Elizabeth Quinn/R3/USEPA/US
Date: 12/12/2011 02:18PM
Subject: Re: RSL question about chlorite

Thanks---after doing more research, I realized that this is what was going on. Thanks for clearing this up.

Yes, it is the Dimock case---of course they've got two tox's reviewing the data--one in HSCD (Dawn), and me. What do you think about the chlorite/chloride comparison? I think it's difficult to compare them directly, especially in light of the secondary MCL for chloride of 250 mg/l (RSL for chlorite is 470 ug/l).

Betty Ann Quinn
Toxicologist
Technical Support Branch
215-814-3388

Jennifer Hubbard---12/12/2011 02:10:59 PM---Is this by any chance the Dimock case?

From: Jennifer Hubbard/R3/USEPA/US
To: Elizabeth Quinn/R3/USEPA/US@EPA
Date: 12/12/2011 02:10 PM
Subject: Re: RSL question about chlorite

Is this by any chance the Dimock case?

The noncancer water RSLs are based on the child receptor starting with this table; they used to be based on the adult receptor.

-----Elizabeth Quinn/R3/USEPA/US wrote: -----

To: Jennifer Hubbard/R3/USEPA/US@EPA
From: Elizabeth Quinn/R3/USEPA/US
Date: 12/12/2011 11:08AM
Cc: Dawn Ioven/R3/USEPA/US@EPA
Subject: RSL question about chlorite

Hi Jenn,

I'm reviewing some data on a Marcellus Shale issue where the water division has flagged well data for chloride, and is comparing the results to the RSL for chlorite. Aside from questions about the validity of the comparison, I notice on the new RSL table the tapwater screening concentration is 470 ug/l, yet the oral RfD and the residential and industrial soil screening concentrations are the same as the older RSL table. Am I missing something here?

Thanks

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